

---

# The system of the houses in the region of Tunis, Typo-morphological analysis and poetic mental representation.

HÉLA GRIRA, MOUNIR DHOUB  
UR SFCA-EDSIA-ENAU- Université de  
Carthage, Tunisie, grirahela@yahoo.fr  
UR SFCA-EDSIA-ENAU- Université de  
Carthage, Tunisie, dhouibm@yahoo.fr

## Abstract

The understanding of any architecture requires a double knowledge and has to merge two types of knowledge: the first is the technique Cartesian one, who approaches the physical conformations by the sensitive perception and produces a systematized and abstract knowledge of theoretical and analytical type; the second is a poetic ideological knowledge, which approaches the imaginary configurations and the mental conception, the values and the doctrinal faiths of spiritual and holistic type. We define the shape as an intermediary interface and mediative between conformation and configuration.

Contrary to a scientific theory, a doctrine recovers from the faith in a kind of conception of the universe, as from of the world and the religious existence. Or to estimate an architecture who is his illustration and expression, it is necessary to bring it back to his own referent, system of values and faiths. But if an architecture is estimated by a system of values and considered by different paradigm, there is inevitably incomprehension and possibly some conflict or rejection.

That's exactly what took place in the case of the houses in the region of Tunis from the end of the 19th century, it aroused an ambiguous feeling, it alternately felt reluctant and fascinated number of travelers and European specialists; as they compare it with paradigms of the Roman and European Greco geometrical order which is for them the standard, or as they consider it as expression of its own paradigm based on the topological equilibration, stemming from the vision of the Arabic culture of the Islam.

Several studies and papers were dedicated as well to the medina as to the houses in the region of Tunis, however all the researches were focused on intramuros houses. While it exists in countrysides surrounding the medina of Tunis with country cottages lived by the same users, the well-to-do city inhabitants, but in different periods from the year. We tried to throw light on this shape of housing in the region of Tunis that we meet in the gardens of countrysides surrounding the city in the pre-colonial period.

The present paper concerns the houses in the region of Tunis, starting an analysis of suburban strengthened residences «the bordjs» of the region of pre-colonial Tunis, while comparing them with city houses «dars». It tries to throw light on this shape of suburban housing in the region of Tunis that we meet in the gardens of countrysides surrounding the medina; and watch that both variants are versions of the same architectural system, and answer the same identical system.

**Key Word:** conformations, configurations, the shape, interface, theory, doctrine, referent, paradigm, geometrical order, topological equilibration, Bordjs, Dars, architectural system, identical system.

## Introduction

The comparative analysis of «Dars and «Borjs» shows that number of hypotheses moved forward to qualify or explain this system stays at the level of generally accepted ideas, objective unfounded judgments of values and hasty opinions. For a long time the travelers, the Orientalists and following the specialists who observed or studied medinas and city architecture in the region of Tunis (beldi) remained shared between a double and ambiguous feeling: they are attracted and fascinated by its interiorized, hidden beauties of which they suspected the existence and into which they did not manage to penetrate; they do not manage to explain its curved lines and its spiral figures, what feels reluctant what deigns to show them the medina: its residual outside space, its labyrinthic roads and its blind walls. The architectural organization of the Moslem house and the city can be effectively thought in terms of generative forms interface: Dialogical of the physical conformations and spatiotemporal configurations.

Next to the medina surrounded with the bulwarks, there is a shape of urbanization, or activity of the territory around the city which are the satellite villages and «bordjs» suburban housing scattered in the gardens (sénias) of countryside. The building itself is surrounded with gardens. The «dar», this house freed from the constraint of common ownership, which married the shape of the plot of land often irregular, and which opened almost exclusively on its centers internal circles; releases itself, it is more opened on gardens and possesses a simple and regular shape.

The «bordj» trained by the same component places as the «dar», is going to elaborate them and to refine them, to use new combinations for new units of places, and is going to show itself in a regular, simple and rigorous shape, but neither axial nor perfectly symmetric.

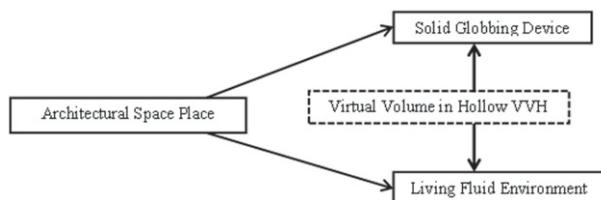
This restructuring seems to us more adequate with the poetics of this architecture; because at the bottom it backs up the principle of interiority, the principle of topological equilibration of a holarchy made by elements and «places-bubbles» which contain themselves some in the others; as much as the principle of passage and transition asserting in every crossing the respective thresholds.

The shift operated by the transfer of the house of an adjoining and grouped environment, in which the plots of land are often irregular, in the other one opened and landscaped, confirms the hypothesis that the «introversion», the «confinement», the «tortuosité», in brief the visible disorder, are owed to the structure extern of the urban morphology. All these attributes are swept in the environment of sénias-gardens. They are not constituent of the traditional architectural system in the region of Tunis.

The house intramuros and the house extramuros, possess this adaptability to their respective immediate environments. This architectural system does not make that to adapt itself to an opened environment; in its adaptation it generates a new shape of housing environment landscape: «the bordj-sénia », of which the «bordj» is only the type of house. What leads us to consider the traditional architectural system in the region of Tunis as an adaptive and creative complex system. We can consider the adaptation and the creativity as acts of «re-design» which acts by transformations at the level of the generative intermediate forms.

### **Dialogic principle**

The idea is that the Architectural Space Place consists of a Solid Globbing Device SGD and a Living Fluid Environment LFE.



**Fig 1:** Dialogical model of architectural place (Dhouib2004).

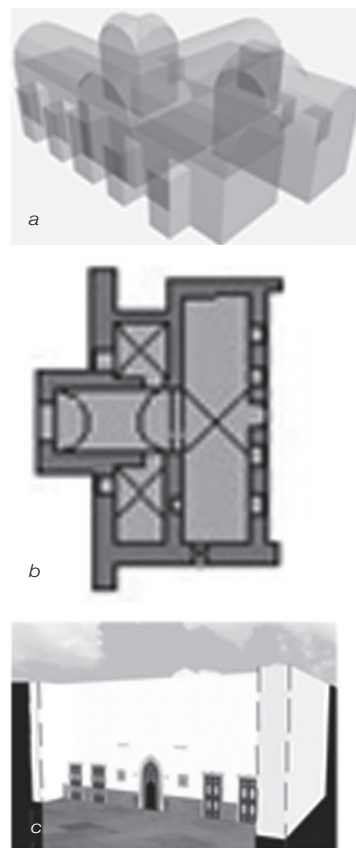
The physical conformation of the Solid Globbing Device SGD and configurations of Living Fluid Environment LFE each defines the other at virtual volume in hollow VVH.

Considering a real fact: the «bayt», it's limited by the walls constituting the Solid Globbing Device. The interaction between the Solid Globbing Device and the Living Fluid Environment is the Virtual Volume in Hollow VVH.

### Holographic principle

Each Virtual Volume Hollow VVH is organized into **holon** (Kostler, 1968), meaning an all constituting an autonomous totality and at the same time a part of a larger whole, of the partial to total.

Example: The « Dar Ndhifa » is a Holon. It is a completely formed of «Wust dar ndhifa», «Bayt ras el dar», «Bayt»... It is also a part of a larger whole which is the «Bordj». The «Bayt ras el dar» is also a holon which is part subsystem «Dar ndhifa».



**Fig 2:** Virtual Volume in Hollow WH.  
 a) Virtual Volume in Hollow  
 b) Solid Globbing Device  
 c) Living Fluid Environment

B1	ELEMENTARY COMPONENTS									UNIT 1: DAR NDHIFA
	PATIO	BAYT BEL KBU ET AKASER	LE PLUS BEAU BAYT	BAYT DIWENI	SKIFA	BAYT	ALJAZ	NOTLA'	MAKSOURA	
ARCHITECTURAL PLACE										
PHYSICAL CONFORMATIONS										
LYING ENVIRONMENT										

**Fig 3:** Organization of holon « Dar Ndhifa » (Girra, 2010).

B1	UNITS						Bordj Kabbet En Khass
	UNIT 1: DAR NDHIFA	UNIT 2: MAKIZEN	UNIT 3: DWIRYA	UNIT 4: DISPOSITIF D'ENTREE	UNIT 5: HANNAH	UNIT 6: DAR EL DHAF	
ARCHITECTURAL PLACE							
PHYSICAL CONFORMATIONS							
LYING ENVIRONMENT							

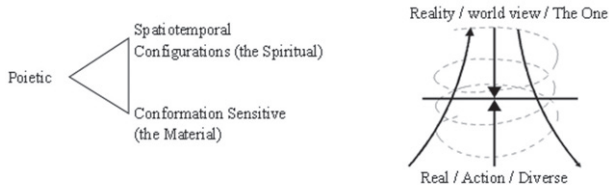
**Fig 4:** Organization of holon «Bordj» (Girra, 2010).

**Poietic interpretation**

We attempt to explain the elaboration of Virtual volume in Hollow using poietic interpretation.

The poietic appears as a dialogly between the Material and the Spiritual comes from a certain worldview.

These schemas we have suggest that the spiritual influences the material during its act of conception and through the imaginary mental. The imaginary mental is



**Fig 5:** Poietic Model (Dhouib, 2004).

located in mediators plans of virtual volume in hollow. And the material suggests in turn the spiritual.

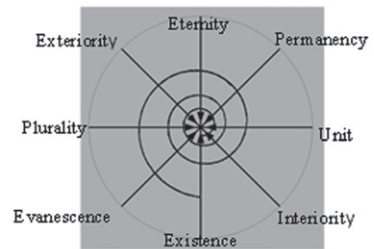
The Virtual Volume in Hollow VVH would be the keystone / the soul of architecture, this is the seat of Structural and Functional Interfaces SFI at level of the architecturological approach. The Virtual Volume in Hollow VVH would be also the mediatif plane between sensitif conformations and spatiotemporal configurations at level of the poietic approach.

In our case of bordjs and dars of the region of Tunis pre-colonial, the poietic doctrine conveys values principles and beliefs of Islam.

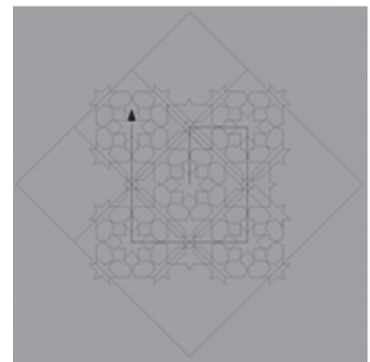
The unitarist vision best expresses world vision by the doctrine of islam. Abstract art and pattern of star polygon are the ideal representation of the unitarist vision.

All creations influenced by this paradigm are in his image. This creations exprime the values ans the properties of their paradigm; architecture of house of the region of tunis is an exemple, it embodies the properties and the essence of his doctrine.

The muslim architecture has embodied the islam spiri-tual paradigm properties: equilibre dynamic, unit in the plurality and plurality in the unit, interiority...



**Fig 6:** Unitary vision which is composed of four pairs (Source: architecture masters course, M.DHOUIB, ENAU).



**Fig 7:** The pattern of star polygon (Source: architecture masters course, M.DHOUIB, ENAU).





they have transferred their life style of the house intramuros to the home extramuros.

We have chosen to compare a town house: *Dar Ben Abdallah* and a suburban home: *Bordj Kobbet En Nhass*.

### Constructive Mode

- Bordjs and dars use the same construction system; the planar plans: bearing walls, Vaulted roof and Flat roof in wood joist .
- The difference in the use of party walls is explained by the change in the immediate environment. The immediate environment is grouped into the fabric Medina, free and opens in the countryside.

Constructive Mode			Bordj	Dar
	Vertical framework	Interior walls	✓	✓
		Common walls		✓
		Exterior walls	✓	✓
	Horizontal framework	Vaulted roof	✓	✓
		Flat roof in wood joist	✓	✓

**Tab 1:** Constructive Mode (Gira, 2010).

### Plastic Shape

- The different units that organize bordjs and dars organize themselves around several courses.



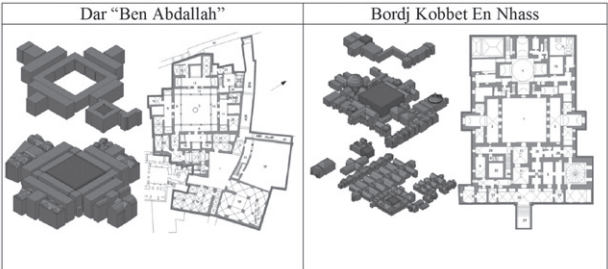
**Fig 10:** In the case of « Dar »; internal structure is the organization of "dar" and the external structure is the grouped urban fabric. (Gira, 2010).



**Fig 11:** Suburban House Extramuros: «Borj» Case of «Borj Kobbet En Nhass». (Gira, 2010).

Always, the bordjs are presented as a simple built in a regular shape whereas the dars suit the shape of the parcel.

*It is the change of the immediate environment that also explains this difference.*



**Tab 2:** Plastic Shape, (Gira, 2010).

*Proportion of the units in the entity*

It is again the change of the immediate environment that influences the proportions of the units entities in the partition.

The bordj stands to the surroundings of the farm garden (swéni). The bordj responds to the agricultural vocation of the farms gardens whereas the dar is part of the fabric médinal and responds to his vocation of lodging.

	Units/entities the most important in term of surface
Bordj	Makhzen: deposit Dar ndhifa: Manor house
Dar	Dar ndhifa: Manor house

**Tab 3:** Proportion of the units in the entity (Gira, 2010).

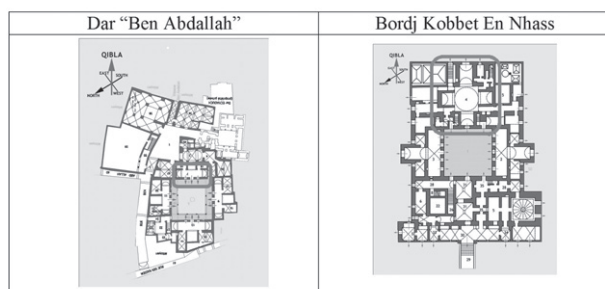
*Orientation*

The most beautiful bayt is often oriented Southeast: the direction of the qibla.

- In the bordj the components open on the farm «sanía», the garden «jnina» and the court of the bordj, the ground floor possesses fewer openings for safety.

- The dars have almost no openings to the outside, the dar opens to the patio that is the internalized outside space.
- The difference is also explained by the change in the immediate environment.

The systemic analysis allowed us to sketch a model of the dwelling of Tunis. The model of the dwelling of Tunis is a sequence of rules.



**Tab 4:** Orientation (Gira, 2010).

**Rule 1:** Constructive System of planar planes: These are massive constructions; the volumes in hollow appear sculpted in material.

**Rule 2:** Bordjs and dars adapt to their respective immediate surroundings/environments.

The dwelling of Tunis has this characteristic to adapt to its surroundings/immediate environment, it is an adaptive complex system.

**Rule 3:** The elementary components are organized into several units, and the units are organized around several courses of distribution, which gives places entities compounds and complexes.

The components of the Tunis dwelling organized into hierarchical level (holons), component Systems of places in intermediate assemblies stable forms.

**Rule 4:** The most important surface in terms of units / entities in the dwelling of Tunis follows the vocation of the building.

Thus changing the structure of urban housing regular-ization of its shape and its organization, partial cover of the courses and openings on the surrounding appears as an adaptation of the same system to a different environment.

**Rule 5:** Proportion and regularity:

- The wust adopts in the two cases a squared shape
- The bayt kbu et mkaser adopts in the two cases an oblong shape.
- The bayt ras el dar is in both cases in a square that adapts to the practice of the place.

**Rule 6:** Orientation

- The bayt ras el dar is oriented Southeast toward the direction of the Qibla

**Rule 7:** The luminous ambiances:

- For bordjs the different bayts opens also toward the outside which invalidates the idea of introversion closing and closing of the dwelling tunisoise.
- It is rather about a research of the progressive interiority since the outside until in the most intimate bubbles.

We felt that the complexity of the house depends on its size (which in turn related to the needs and resources of the owner). We felt also that places components while preserving the same components will increase in size when going from the common house to go to the mansions and palaces in the case of bordjs and dars.

- The architecturological analysis on the dwelling tunisoise has shown us that the two sub systems studied belong to the same architectural system that of the dwelling Tunis.

Their difference in shape is caused by an adaptation of the structure of the dwelling to an open environment.

The dwelling as a CAS adapts to different situations:

In Urban Environment	In Suburban Environment
<ul style="list-style-type: none"> <li>- Typological variety</li> <li>- Development, sophistication, by changing the structure and form and setting up new components, and news settings: Assemblies and intermediate forms as so many creative adaptations.</li> </ul>	<p>The system of the dwelling expressed freely far from the constraints of regrouping and common ownership.</p> <p>The owners belong to the Khassa they will go in sophistication and development of this system.</p>

**Tab 5:** *Adaptation of the dwelling of the region of Tunis (Griira, 2010).*

If we consider bordj Kobbet In Nhass and Dar Ben Abdullah, the two dwellings have the same component systems, dar ndhifa, Makhzen, dispositif d'entrée, dwir-iyia et dar Dhiaf.

This is a same and a single type; that suits every time to its immediate environment and acquires each time a different structure sometimes common and grouped and sometimes free and regular.

While considering the different «bayts» (rooms, apartments) encountered in the collections of dars and borjs we noticed that the bayt acquired enough maturation to stand as a unit; «bayt bel kbu et mkaser » (T room flanked by alcoves), characteristic unit of the bordjs and dars, this is about the place of life of an unicellular family; le «bayt ras el dar» (the most beautiful room) resulting from the multiplication of bayt bel kbu allowing it to acquire more maturity and sophistication. It meets a



**Fig 12:** *Dar Ben Abdallah (Griira, 2010).*



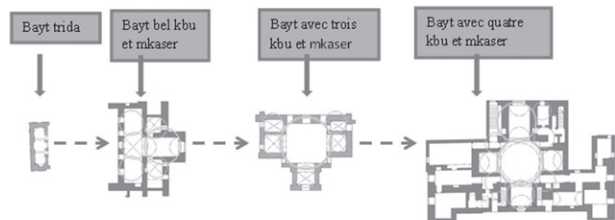
**Fig 13.** Bordj Kobbet En Nhass (Gira, 2010).

wide variety of bayt ras el dar, bayt with three kbu et mkaser (borj chouikha), bayt with four kbu et mkaser (borj Kobbet En Nhass).

This is an organization / topological growth, a disposition of bubbles living areas are established and fit (competitive cooperative behavior) to form intermediate assemblies; composing systems. This is a *topological ordering*.

The bordj formed by the same composing places that the dar, will develop and refine them, to use new combinations for units of unprecedented places. The bordj will appear in a regular, simple and rigorous shape, but not axial nor perfectly symmetrical.

This restructuring seems more appropriate with the poetics of this architecture because basically it protects the principle of *interiority*, the *topological equilibration principle*, a *holarchy* made elements and «places-bubbles» that contain each other; as much as the *principle of passage and transition* affirming to every crossing the respective doorsteps.



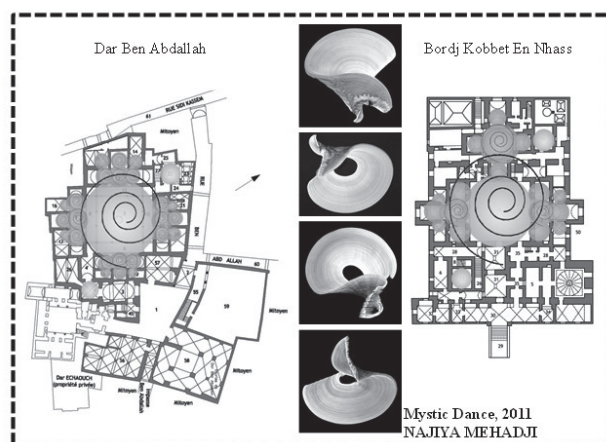
**Fig 14 :** Organization of bubbles (Gira, 2010).

## Conclusion

By exploring the fields of the poietic (the man's science that doesn't study a fact, but rather the action of its creation and the conditions that are favorable to him) we can interpret the sets of rules found; indeed in opposition to the ideal of the Greek that was the proportions,

the tangible physical world and finished with its clearly defined boundaries, the ideal of the Muslims appears in the enjoyment of the infinity. The Islamic architecture opted for the incarnation of the principles that governs the nature such that the dynamic equilibrium, the unit in plurality and plurality in the unit, the interiority...

It is this movement close to the cosmic movement that one to the multiple and the multiple to the one described the whole universe, and this is the movement within the dwelling of Tunis brings all parties to the center and project the unit in the parts. (Turned of the bayts around the must el dar; bubbles in turn surround the walls...).



**Fig 15:** Poietic interpretation (Gira, 2010).

## Bibliography

### Books and articles

ABDELKAFI, J. (1989). *La médina de Tunis : espace historique*, Tunis ; Paris, Alif : CNRS, 277p.

KOESTLER, A.(1960). *les somnambules, essai sur l'histoire des conceptions de l'univers*. Paris, 2010, les belles lettres, 595 pages.

- KOESTLER, A.(1965). le cri d'Archimède, l'art de la découverte et la découverte de l'art. calmann-levy, 445 pages.
- KOESTLER, A. (1968). Le cheval dans la locomotive, le paradoxe humain. Calmann-Lévy.
- KOESTLER, A.(1979). Janus, esquisse d'un système. Paris, calmann-levy , 345 pages.
- LE MOIGNE, J-L. (1999). Les épistémologies constructivistes. PUF.
- LE MOIGNE, J-L. (1984). La théorie du système général : théorie de la modélisation. PUF, Paris.
- MARCAIS, G. (1927). Manuel d'art musulman, l'architecture Tunisie, Algérie, Maroc, Espagne, Sicile.2. du 13e au 19e siècle, Paris, Picard, 461-967p.
- MARCAIS, G. (1937). Tunis et Kairouan, les villes d'art célèbres, Paris, H.Laurens, 147p.
- MARCAIS, G. (1954). L'Architecture musulmane d'occident Tunisie, Algérie, Maroc, Espagne, Sicile, Paris, Arts et métiers graphiques, 539p.
- MONCHICOURT, C (1904). La région de Tunis, Paris, A.Colin, 1904, 24p.
- MORIN, E. (1990). Introduction à la pensée complexe. ESR, Paris.
- PELLEGRIN, A. (1955). Histoire illustrée de Tunis et de sa banlieue, Tunis, Saliba, 187p.
- REVAULT, J. (1968). Palais et demeures de Tunis (XVIe et XVIIe siècles), Paris, CNRS, 337p.
- REVAULT, J. (1971). Palais et demeures de Tunis (XVIIIe et XIXe siècles), Paris, CNRS, 466p.
- REVAULT, J. (1974). Palais et résidences d'été de la région de Tunis (XVIe- XIXe siècles), Paris, CNRS, 448p.
- REVAULT, J. (1978). L'Habitation tunisoise : pierre, marbre et fer dans la construction et le décor, Paris, CNRS, 318p.
- REVAULT, J. (1884). Palais, demeures et maisons de plaisance à Tunis et dans ses environs, (du XVIe au XIXe siècles), Aix en Provence, Edisud, 174p.
- SIMON, H.A. (1991). Sciences des systèmes, sciences de l'artificiel. Dunod.
- TABARY, J.-C (1987). Le paradigme holographique. Revue internationale de systémique, Vol.1.n°2.
- TABARY, J.-C (1991). cognition, systémique et connaissance. Dunod.
- WALLISER, B. (1991). Une typologie des hiérarchies. Revue internationale de systémique, Vol.5.n°1.
- Thesis
- DHOUB, M. (2004). De la construction de connaissances à la création : modélisation du processus de conception architecturale. Thèse de doctorat, ENAU, Tunis.
- GRIRA, H. (2010). Architecture de l'habitation tunisoise ; analyse des résidences suburbaines fortifiées « les bordjs » de la région de Tunis pré-colonial et des maisons citadines « les dars ». Mémoire de maîtrise DEA, ENAU, Tunis.